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A UNIFORM CHAIN APPROACH TO SCRAMBLING PARADOXES¹

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0.Introduction

In recent years, the Scrambling phenomenon has been central to a debate concerning the typology of syntactic positions. In particular concerning the standard A/A-bar distinction, it has been claimed in various sources that the properties of Scrambling supported the existence of a third, ambiguous type of position. For instance, Webelhuth (1989) first observed that certain scrambled elements simultaneously showed A and A-bar type properties, as illustrated in (1).

- (1) (Webelhuth 1989)
? Peter hat die Gäste_i [ohne e_i anzuschauen] einander_i t_i vorgestellt
Peter has the guests without looking at each other introduced-to
(Peter introduced the guests_i to each other_i without looking at e_i)

The underlined scrambled NP seems to simultaneously A-bind the anaphor and A-bar bind a Parasitic-gap. This type of A/A-bar binding paradox, or Scrambling paradox, led Webelhuth (1989) and more recently Saito (1991) to relax the standard A/A-bar distinction and posit an additional 'Non-Argument/Non-Operator' or NANO position. NANO positions are held 'ambiguous' between A and A-bar and may accordingly license processes dependable on either type of position, and this simultaneously.

This paper basically objects to such ambiguous approach and presents an analysis framed in a strict and non-ambiguous theory of A/A-bar positions and Chains. I maintain that instead of relaxing or extending the A/A-bar distinction as the NANO approach suggests, better results are achieved by actually strengthening the implementation of the A/A-bar distinction. In particular, I propose a strict condition of A/A-bar Chain Uniformity, which will allow us to capture a third type of A/A-bar paradox that I will introduce later in the discussion.

Before presenting my proposal, I first review Saito's recent arguments for the NANO approach in Japanese. I argue that his arguments can find alternative explanations in a Strict A/A-bar approach and are therefore inconclusive for the NANO position. Next, I introduce the basic assumptions on which an alternative is proposed, then supporting evidence is discussed.

1.0 WCO AND LD-SCRAMBLING IN JAPANESE

In addition to the type of paradox in (1), Saito (1991) introduces two other problems for a strict A/A-bar approach to Scrambling. One involves a split between WCO and A-Binding, and the other what Saito argues to be the Semantically Vacuous Status of Scrambling in Japanese. I now discuss these points in turn, beginning with the split between WCO and A-binding.

- (2) ? [karera_i-o [[otagai_i-no sensei]-ga t_i hihansita]] (koto)
 them-acc each other-gen teacher-nom criticized (fact)
 (Them_i, each other_i's teachers criticized t_i)
- (3) a.*? [_{IP}[_{NP}Soitu_i-no hahaoya]-ga [_{VP}dare_i-o aisiteru]] no
 the guy-gen mother-nom who-acc love Q
 (His_i mother loves who_i)
- b.? [_{IP}dare-o [_{IP}[_{NP}Soitu_i-no hahaoya]-ga [_{VP}t_i aisiteru]] no
 Who-acc the guy-gen mother-nom love Q
 (Who_i, his_i mother loves t_i)
- (4) (Saito 1991 citing Yoshimura 1989)
- a.*? [[soitu_i-no hahaoya]-ga [_{CP}[Hanako-ga Dare_i-o aisiteiru] to] omotteru] no
 the guy-gen mother-nom nom who-acc loves COMP think Q
 (His_i mother thinks that Hanako loves who_i)
- b. ? Dare_i-o [[soitu_i-no hahaoya]-ga [_{CP}[Hanako-ga t_i aisiteiru] to] omotteru] no
 who-acc the guy-gen mother-nom -nom love COMP think Q
 (Who_i, his_i mother thinks that Hanako loves t_i)
- c. ? Dono hito_i-mo [soitu_i-no hahaoya]-wa [_{CP}[Hanako-ga t_i aisiteiru] to] omotteinai
 which person_i-also the guy-gen mother -top nom love COMP think-not
 (Anyone_i, his_i mother doesn't think that Hanako loves t_i)
- (5) * [Karera_i-o [otagai_i -no sensei]-ga [_{CP} [Hanako-ga t_i hihansita] to] itta]] (koto)
 they-acc each other-gen teacher-nom -nom criticized COMP said fact
 (Them_i, each other_i's teacher said that Hanako criticized t_i)

Examples (2) and (3) in Japanese show respectively that Short-Distance (short-D) scrambling licenses anaphor binding and yields no WCO effect.² The contrasts in (4) illustrate that Long-Distance (long-D) scrambling does not trigger WCO either. The significant case is (5) where anaphor binding is not licensed in the latter context. Saito points out that such split between WCO and A-binding with LD-scrambling is unexpected under a standard A/A-bar distinction where A-binding and absence of WCO are related to A-chains. Instead, Saito captures such split under a particular implementation of the NANO approach. Assuming that NANO positions are only licensed at S-structure, Saito adopts a hypothesis of Tada (1990) which posits that at LF, a NANO position must be reanalyzed along one of the three options in (6).

- (6) (Tada 1990, Saito 1991) NANO position at LF:
- a. it disappears (undone)
 - b. it reanalyzes as an A-bar position
 - c. it reanalyzes as an A-position.

For instance, option (6c) applies if an anaphor must be licensed by the scrambled NP. Reanalysis into an A-position triggers construal of an A-chain, and typical locality effects on A-chains will surface. This assumption basically accounts for the typical clause-boundedness of the A-binding properties of Scrambling, reflected by the contrast between (2) and (5) in Japanese.

The core claim of Saito really is the option (6a). It presupposes that Scrambling, contrary to genuine Operator movement, can be undone without damage at LF. To support such view Saito argues that Scrambling, contrary to Wh-movement, is semantically vacuous. I come back to that claim directly. Pursuing on the assumption that Scrambling can be undone at LF, any potential WCO configuration can thus be eliminated at that level. Given that NANO positions do not trigger WCO at S-structure because of their ambiguous status, the absence of WCO with either SD- or LD- Scrambling in Japanese is accounted for. In sum, assuming the semantically vacuous status of scrambling in Japanese, the split between WCO and anaphor binding is accounted for. Since semantic vacuousness is crucial, let us now consider Saito's argument for it. The crucial contrast is illustrated in (7) and (8).

- (7) a. * Hanako-ga dare-ni [_{CP} [_{IP} Masao-ga kuru] ka] osieta koto
 -nom who-to -nom come Q taught fact
 (the fact that Hanako told who [Q[masao is coming]])
 b. * Hanako-ga t_i [_{CP} dare-ni [_{IP} Masao-ga kuru] ka] osieta] koto

- (8) Dono hon-o_i [Masao-ga [_{CP} [_{IP} Hanako-ga t_i tosyokan-kara karidasita] ka] siritagatteiru] koto
 which book-acc -nom -nom library-from checked out Q want-to-know fact
 (the fact that which book_i, Masao wants to know [Q [Hanako checked out t_i from the library])

For Saito, the S-structure (7a) yields a Proper Binding violation at LF. The Proper Binding Condition, initially proposed by Fiengo (1974), requires all traces to be bound. Hence, following standard assumptions about LF Wh-movement of in-situ Wh-phrases, the Wh-phrase dare-ni in the main clause

has to move to the embedded CP containing the Question marker at LF, which as shown in (7b), leaves a unbounded trace at that Level, whence a Proper Binding violation. In contrast, example (8) illustrates LD-scrambling of a Wh-phrase outside the clause containing the Question marker. Just as for the previous case, moving back the Wh-phrase in the embedded spec of CP at LF should leave an unbounded trace, but as Saito points out, the sentence is at worse slightly marginal. Saito concludes from this fact that Scrambling, contrary to Wh-movement at LF, can be freely undone without leaving a trace, therefore escaping a Proper Binding violation.

The argument is quite striking, but relies crucially on the assumption that an *in situ* Wh-phrase must move to an appropriate COMP at LF. Another view is recently argued for in Aoun and LI (1993) according to which, in languages like Japanese, Korean and Chinese, Wh-elements are not intrinsically interrogative and do not move to COMP at LF. Rather, Wh-elements are already co-indexed and interpreted w.r.t. a Question Operator in the appropriate COMP at S-structure, as shown below.³

(9) ... [_{CP} Question-Op_i [... Wh-element_i...]]

If Aoun and Li are correct, then a direct alternative for the contrast (7)/(8) is available in terms of Vacuous Quantification. As sketched in (10), the Question Operator in (7) doesn't have any variable to bind in its clause. In contrast in (8), the Question operator does bind the variable trace left by Scrambling. Hence (7), but not (8), is ruled out by Vacuous Quantification.⁴

(10) (7) = * [... Wh_i ... [_{CP} Question-Op_i ...]
 (8) = [... Wh_i ... [_{CP} Question-Op_i ... t_i]

This alternative way of looking at Wh-elements in Japanese further provides a plausible account for the lack of WCO with LD-scrambling. Notice first that the split between WCO and A-binding is a problem for the A/A-bar distinction only if A-bar movement always triggers WCO, i.e. only if WCO is a genuine test for the A/A-bar distinction. Incidentally, Lasnik and Stowell (1991) point out that certain types of A-bar binders do not induce WCO effects. Topicalization in (11b) and the Null Operator (NO) movement in the Parasitic Gap construction in (11c) do not trigger WCO, contrary to Wh-movement in (11a).

(11) Lasnik and Stowell (L&St 1991)
 a. * Who_i did his_i sister call e_i a moron
 b. Frank_i, his_i sister calls e_i a moron
 c. Which man_i did you look at t_i [_{O_i} before his_i wife had spoken to e_i]

Lasnik and Stowell (L&St) propose that these contrasts reflect the distinct Quantifier status of these A-bar binders. Unlike Wh-phrases, Topics and Null Operators are not *true* Quantifier Phrases (QPs).⁵ Given this distinction, Lasnik and Stowell propose the following generalization.⁶

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(12) Lasnik and Stowell (1991)

'WCO occurs just when a pronoun and a trace are locally A-bar bound by a *true* QP'

For instance, the Parasitic Gap construction in (11c) is schematized as (13a), where the acts as the local binder for the pronoun and the variable, preventing binding from the Wh-phrase and a potential WCO configuration.

- (13) a. [Wh_i... [NO_i ...[_{NP} pronoun_i] ...e_i] ...t_i]
 b. [Question-OP_i ... Wh-element_i ...[_{NP}...pronoun_i...] [_{CP} ... t_i]]

Now, consider in (13b) the representation for (4b), which is the case of LD-scrambling without WCO. Still assuming Aoun and Li's analysis, the *true* QP will be the abstract Question operator occupying the appropriate COMP. The Wh-element, not a *true* QP, occupies its scrambled position. The result is basically parallel to the P-gap configuration in (13a). The Wh-element acts as the local A-bar binder for the pronoun and the variable, preventing the *true* Question operator from locally binding these elements and yielding a WCO effect.

In sum, assuming the proposal of Aoun and LI, an account for the absence of WCO effect with LD-scrambling is available, without the need to rely on the Vacuous status of Scrambling as proposed by Saito. The existence of such alternative, which preserves standard assumptions about the status of traces left by LF movement, considerably weakens Saito's argument to recognize a special LF status for Scrambling.

2.0 CHAIN UNIFORMITY

This now leaves one type of Scrambling Paradox for the A/A-bar approach, namely the one Webelhuth originally pointed out. The core of my claim is that an appropriate response to apparent shortcomings of the A/A-bar distinction is not to relax its implementation as the NANO approach suggests, but actually constrain it further. I argue that such constraining approach not only provides a proper account of scrambling paradoxes, but one that captures intricate properties which a NANO approach doesn't predict. A major component of this view is the notion of A/A-bar Chain Uniformity.

(14) Chain Uniformity

All Chains are A/A-bar Uniform

Chain Uniformity extends a partial generalization of Browning's (1989) to the status of general wellformedness condition on chain formation. Browning observed that A-chains, adjunct A-bar chains and Head chains are all Uniform, i.e. they only contain chain members of the same type, but Uniformity did not extend to Operator-variable chains such as (15a).⁷

(15) Operator-Variable Chains

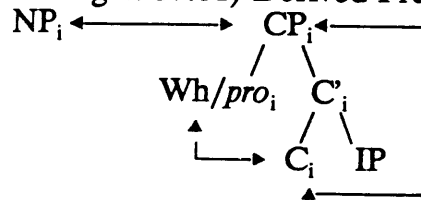
- a. [_{CP} Who_i [do [t_i [_{IP}you [_{AGR}P t_i [_{AGR}' [VP like e_i]]]]]]]] (*non-Uniform)

- b. [_{CP} Who_i [_{do} [_{t_i} [_{IP}you [_{AgrP}t_i [_{AgrP}pro_i [_{Agr'} [_{VP}like e_i]]]]]]]]]

Notice that an Operator-variable chain is standardly characterized as an A-bar chain containing an Argument position at its tail. As a principle, Chain Uniformity now excludes a representation such as (15a) as non-Uniform. I propose that the only option left is to decompose Operator-variable chains in two distinct and Uniform chains, as shown in (15b), connected through a Derived Predicate Formation, a strategy independently required for Null Operator Constructions. Derived Predicate Formation (henceforth DPF) is developed in Browning (1987) for constructions such as the Infinitival relative and the Purpose Clause in (16). For Browning, these Null Operator Constructions are licensed through a Clausal Predication relation, as schematized in (17).

- (16) a. A man_i [_{CP}pro_i [_{IP}to PRO talk to e_i]]
 b. I bought it_i [_{CP}pro_i [_{IP}to PRO read e_i]]

- (17) (Browning 1987:61) Derived Predicate Formation



Clausal Predication is formally instantiated through an Agreement Chain between the Null Operator (NO), which Browning takes to be small-*pro*, and an NP external to the derived predicate CP. The agreement chain proceeds through spec-head agreement between spec of CP and COMP, then from COMP to CP through feature sharing, and finally through Predication between CP and the external NP. Hence, the small-*pro* in spec of CP is identified through an agreement chain with the CP-external NP (i.e. the 'subject' of the clausal derived predicate, CP).

Whereas Browning does not explore Derived Predicate Formation (DPF) for other categories than CP, I maintain that any functional category can in principle participate to such strategy, in particular AgrPhrases as in (15b) for Operator-variable chains. Consider how (15b) comes about. After Wh-movement at S-structure, construal of an Operator-variable chain as in (19a) containing both the argument-gap (an inherent A-position) and the Wh-phrase in COMP (an A-bar position) violates Chain Uniformity. An option offered by DPF is to construe two distinct chains, as in (15b), namely a Uniform A-chain from the argument-gap to spec of AgrP, and a Uniform A-bar chain from a position adjoined to AgrP up to the Wh-phrase in COMP.⁸

Just as in other Null Operator Constructions, the two chains connect through DPF, i.e. small-*pro* is identified with the Wh-phrase (actually, its trace) by an agreement chain through AgrP.

An important assumption for the implementation of Chain Uniformity is the Unified Chain definition in (18), proposed in Canac Marquis (1993).

← [Agr_{OP} t_i [Agr_{OP} *pro*_i [VP [be oostad-e kodash]_i t_i moa?refi-kardam-1s]]]]
 A-chain

The A-chain headed by small-*pro* licenses the anaphor kodash in the indirect object (IO), while the adjoined NP A-bar binds the P-gap in the adjunct, itself adjoined to AgrP to prevent binding from the A-chain. Now examples in (23) crucially contrast with (22). In (23a), the relative order of the IO and the adjunct is inverted, and the sentence is out. As (23b) shows, the sentence is fine without the anaphor. Licensing the anaphor is thus what creates a problem in (22). Notice that such contrasts are not predicted by a NANO approach. Basically, the relative order of the dependent elements should not matter, as long as they are c-commanded by the scrambled NP.

- (23) a.* man Hassan_i-ra [be... kodash]_i [ba?d...e_i kardam] t_i moa?refi-kardam
 I Hassan-OM to himself after meeting-3s introduced-1s
- b. man Hassan_i-ra [be oostad] [ba?d... e_i kardam] t_i moa?refi-kardam
 to professor
 (I, Hassan_i, introduced t_i to professor after meeting e_i)

In turn, Chain Uniformity and DPF predict such contrast. As shown in (24), the anaphor in the IO must reside in the domain of the A-chain headed by small-*pro* to be bound by the latter at LF.¹⁰ However, since the adjunct follows the IO, the P-gap is also bound by the small-*pro*, yielding a Condition C violation at LF where the P-gap isn't shielded by an operator.¹¹

- (24) [IP man [Agr_{OP} Hassan_i-ra [Agr_{OP} *pro*_i [VP [be oostad-e kodash]_i]
 [ba?d az een-ke molaghat e_i kardam] e_i moa?refi-kardam]]]]
 A-chain

The grammaticality of (23b) is also explained. Because the IO does not contain an anaphor, no A-chain is required at LF for A-binding. The 'scrambled' NP adjoined to AgrP can locally A-bar bind both the argument-gap and the P-gap, as in typical P-gap configurations.

In sum, the data in Persian support the presence of distinct A and A-bar licensing elements, just as Chain Uniformity and DPF predict there should be. Importantly, the same data speak against a NANO approach for which a single formal element displays both A and A-bar properties.

Turning now to Japanese, there is also evidence that a Chain Uniformity approach must be preferred to a NANO one. In addition to IP-scrambling, or adjunction to IP, Saito and Tada (1991) show that scrambling can be IP-internal, i.e. lower than the nominatively-marked NP.¹²

- (25) [IP Masao-ga [VP Taroo-o_i Hanako-ni [v_r t_i syookaisita]]]] (koto)
 Masao-nom Taroo-acc Hanako-to introduced (fact)
 (Masao, Taroo_i, introduced t_i to Hanako)

As IP-scrambling, *IP-internal* scrambling feeds anaphor-binding. As shown below, an anaphor contained in an IO can be bound by the direct object if the latter is *IP-internally* scrambled in a c-commanding position.

- (26) a. * [_{IP}Masao-ga [_{VP}[otagai_i-no sensei]-ni karera_i-o syookaisita]] (koto)
 Masao-nom each-other-gen teacher-to they-acc introduced (fact)
 (Masao introduced them to each-other's teacher)
- b. [_{IP}Masao-ga [_{VP}karera_i-o [otagai_i-no sensei]-ni [_V t_i syookaisita]]] (koto)
 Masao-nom they-acc each-other-gen teacher-to introduced (fact)
 (Masao introduced them to each-other's teacher)

Contrary to IP-scrambling however, *IP-internal* scrambling does not show typical Reconstruction effects of A-bar movement. Hence, if a direct object anaphor is scrambled *IP-internally*, it creates a Binding condition B or C violation if it is bound by the indirect object. The following contrast between IP-scrambling and *IP-internal* scrambling illustrates this.

- (27) (from Saito & Tada 1991)
- a. Otagai-o_i [karera_i-ga t_i hihansita] (koto)
 self-acc they -nom criticized fact
 (each other_i, they criticized t_i)
- b.* Masao-ga [_{VP}otagai-o_i [karera_i-ni t_i syookaisita (koto)]]
 Masao-nom self-acc they-to introduced (fact)
 (Masao, each other_i, introduced t_i to them_i)

Saito and Tada suggest that *IP-internal* scrambling is substitution into spec of AgroP, excluding the possibility of adjunction to VP or AgroP. While this claim might describe the facts, it remains a stipulation. Indeed, why should adjunction to VP or AgroP be excluded as an instance of Scrambling or yet, why should substitution to spec of AgroP necessarily involve A-movement? The question is particularly relevant for Persian where as shown previously, P-gap licensing is allowed with *IP-internal* scrambling, thus adjunction must be permitted. Further as we shall see below, it is not the case that the landing site for *IP-internal* scrambling necessarily is an A-position, as it can also be A-bar.

The Chain Uniformity approach provides a direct explanation for these states of affairs. Notice that as a direct consequence of Chain Uniformity, an Argument-chain must minimally extend to the first specifier of Functional category where a DPF can apply. Indeed, DPF is the only interface between an A-chain and an A-bar chain, and since DPF applies only with Functional categories, the A-chain containing the argument position must minimally extend up to the first such category, plausibly always an AgrP.¹³

Hence in (27b), while the NP *otagai* itself might be adjoined to AgroP and occupy an A-bar position, the small-*pro* in spec of AgroP with which *otagai* connects must be the head of a Uniform A-chain tailed by the argument gap. As a consequence, co-indexation of small-*pro* with a non-

anaphoric element in the IO necessarily yields a Binding condition violation.

This analysis predicts that the surface position of the scrambled NP should not matter, since it really is the A-chain within the AgroP which triggers a Binding violation. And indeed, consider what happens if the direct object in (27b) is scrambled higher up to IP.

- (28) * [_{IP}otagai-o_i [_{IP} Masao-ga [karera_i-ni t_i syookaisita (koto)]]
 self-acc Masao-nom they-to introduced (fact)
 (each other_i, Masao introduced t_i to them_i)

The judgment remains the same as in (27b) and contrast directly with (27a), i.e. (28) and (27a) are both IP-scrambled direct objects. This latter contrast is important since it distinguishes a theory of scrambling based on ambiguous positions from the view advocated here where A and A-bar positions are kept distinct. For instance, it is far from clear in a NANO approach why (28), but not (27a), should trigger different Binding effects. In Saito's theory, the landing site of an NP is what determines its binding properties, e.g. adjunction of an NP to IP in Japanese creates a non-operator/non-argument position, one which can participate to either A or A-bar binding. There is thus no obvious way of distinguishing (28) from (27a).

IP-internal scrambling distinguishes between the NANO and the present approach in one further way. Nemoto (1991) notes that IP-scrambling out of a tenseless clause can license an anaphor in an upper clause.

- (29) (from Nemoto 1991)
 a. * otagai_i-no titioya_j-ga [[PRO_j John to Bob_i-o rikaisiyoo] to] kokoromita
 each-other's father-nom -acc understand COMP attempted
 (Each other_i's father attempted to understand John and Bob_j)
 b. John to Bob_i-o [_{IP} otagai_i-no titioya_j-ga [[PRO_j t_i rikaisiyoo] to] kokoromita]
 John and Bob-acc each-other's father-nom understand COMP attempted
 (John and Bob_i, e.o._i's father attempted to understand t_i)

The same strategy operates for IP-internal scrambling.

- (30) [Jūn_j-ga [karera_i-o [_{VP}otagai_i-no titioya_j-ni][PRO_j t_i daizinisiru yooni] itta]] (koto)
 -nom they-acc e.o._i-gen father-to take care to said (fact)
 (John, them_j, told each other_i's father to take care of t_i)

Hence, if a tenseless clause is involved, Short-D and Long-D IP-internal scrambling behave similarly w.r.t. A-properties. However, contrary to clause-bounded IP-internal scrambling, Long-D IP-internal scrambling doesn't show the contrast between (28-27b) and (27a), i.e. Long-D IP-internal scrambling does show Reconstruction or Linking effects (31-32 from Postal 1974).

- (31) a. [_{IP}John-ga [zibunzisin_i-o [_{VP}Mary_i-ni [PRO t_i hihansuru yooni itta]]] (koto)
 -nom self-acc -to criticize to said (fact)
 (John, herself_i, told Mary_i to criticize t_i)

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- b. [_{IP}zibunzisin_i-o [John-ga [_{VP}Mary_i-ni [PRO t_i hihansuru yooni itta]]] (koto)
 self-acc -nom -to criticize to said (fact)
 (Herself_i, John told Mary_i to criticize t_i)
- (32) a.? [_{IP}John-ga [otagai_i-o [_{VP}karera_i-ni [PRO t_i hihansuru yooni itta]]] (koto)
 -nom self-acc they-to criticize to said (fact)
 (John, each other_i, told them_i to criticize t_i)
- b. [_{IP}[otagai_i-o [John-ga [_{VP}karera_i-ni [PRO t_i hihansuru yooni itta]]] (koto)
 self-acc -nom they-to criticize to said (fact)
 (each other_i, John told them_i to criticize t_i)

This is again unexpected under an approach in terms of ambiguous positions, where the landing site of an XP determines its A/non-A status. Under the default assumption that the landing site for short-D and long-D *IP-internal* scrambling is the same, one would expect parallel Binding and Reconstruction behaviors in both cases, contrary to facts.

The derived-predicate approach in turn offers a natural explanation for this discrepancy. In the case of long-D *IP-internal* scrambling, contrary to short-D *IP-internal* scrambling as discussed above, the chain need not be an A-chain. Again, the obligatoriness of construing an A-chain is limited to within the scope of the first AgrP dominating the argument-gap. Beyond that AgrP, either the A-chain can be extended or a distinct A-bar chain can be construed and linked to the A-chain through DPF. Hence, long-D *IP-internal* scrambling is expected to show either A or A-bar properties, the choice between the latter being constrained by structural (e.g. Tense) and Binding conditions.

Summing up this section, I proposed a strict Chain Uniformity approach to Scrambling paradoxes and discussed three types of evidence supporting this particular strict A/A-bar approach over one requiring ambiguous positions. Yet, in the next section I report another type of A/A-bar paradox suggesting that one must reckon with some 'ambiguous' status for certain positions. As I propose, Chain Uniformity offers a natural and explanatory way of capturing the turncoat property of these positions.

4.0 CHAIN UNIFORMITY AND AMBIGUOUS POSITIONS

The next A/A-bar paradox is not related to Scrambling, but concerns growing evidence that certain specifiers of Functional Categories can be used either as A or A-bar positions. The strongest case concerns spec of IP, which has been argued to be the landing site of either A or A-bar movement. Such proposals are found in particular in Bonet (1990) for Catalan, Goodal (1991) and Canac Marquis (1991) for Spanish, Borer (1992) for Hebrew and Pesetsky (1990) for English. If these authors are correct, then spec of IP is a potential paradox for a strict A/A-bar distinction. Other functional categories as well seem to display such a variable status. Particularly interesting cases involve spec-head agreement. For instance in French, past-participle agreement is triggered either by A-movement like passive (33a), or by Wh-movement (33b). Assuming, following Kayne (1989), that agreement is triggered by movement

through spec of AgroP, then spec of AgroP in French would also seem to participate to either A or A-bar chains as an A or A-bar position.

- (33) a. Les tâches_i [O_i [que tu as [_{AgroP} t_i [_{VP} fait-es t_i...]]]]
 the duty-AGR that you have done-AGR
- b. Les tâches_i ont été [_{AgroP}t_i [_{VP}fait-es t_i]] par Pierre?
 The duty-AGR have been done-AGR by Peter

(34) is a similar case of agreement in Kilega, as reported by Kinyalolo (1991). Kinyalolo argues that agreement involves a spec-head relation between a 'subject' and Aspect phrases. All Aspect phrases must agree with whatever the syntactic subject is, which can be the logical subject in (a), a passivized object in (b), an adjunct Wh-phrase (c) or an argument Wh-phrase from a dependent constituent in (d).

- (34) (from Kinyalolo 1991)
- a. nzogu zi-kili z-a-twag maswa
 10-elephants 10AGR-be-still 10-AGR-A-stampede 6farm
 'The elephants are still stampeding over the farms'
- b. mikoko z-á-bézag zí-se z-á-sínz-u-a
 4sheep 4AGR-A-be-fv 4AGR-E 4-AGR-A-slaughter-Pass-fv
 'The sheep were about to be slaughtered'
- c. buni bu-kili bu-a-twag-a nzogu maswa
 14how come 14AGR-be-still 14AGR-A-stampede 10elephants 6farm
 'How come the elephants are still stampeding over the farms'
- d. biki bi-ete bi-ku-tenda bana bi-tw-a-kit-ele
 8what 8AGR-ASP 8-AGRProg-say 2-childdren 8-AGR-1pl-pt-do-perf
 'What are the children saying we had done'

Again, assuming that agreement reflects a spec-head relation, these examples suggest that specifiers of AspP can be used as either A or A-bar position, depending on the the type of chain involved. Finally, consider a last case involving spec of DP in English. As shown in (35), spec of DP can be used as an A-position for Binding, or as the head of an A-bar chain in the licensing of a subject Parasitic Gap.

- (35) a. John likes [_{DP} Mary_i's [_{NP} picture of herself_i]]
 b. Who_i did [_{DP} O_i [_{D'} a [_{NP}picture of e_i]]] annoy t_i

The above examples suggest that specifiers of Functional categories can be used as intermediate step for either A or A-bar chains, i.e. can be used as either A or A-bar positions. There are two ways to interpret this. One is to maintain that these specifiers are 'ambiguous' insofar as they are inherently

both A and A-bar. There is however an important cost to this view, namely the one of explaining why all these specifiers are not similarly ambiguous in all languages. Another view, proposed in Canac Marquis (1993), relies on the following generalization.

- (36) Specifiers of functional categories are inherently undetermined as to their A/A-bar status.

The basic idea here is to allow all inherently undetermined positions, which I identify with specifiers of FCs¹⁴, to be interpreted contextually to the chain they are a member of, a result that can only be secured if all positions in a given chain are unambiguous and identical, which is exactly what Chain Uniformity requires. Under such view, there is no exponential complexity associated with the increasing number of functional categories that were introduced in recent years, and mostly with the task of determining the A or A-bar status of their specifiers. Cross-linguistic variation as to whether or not certain specifiers can be used as A or A-bar can be reduced to algorithms of chain formation, which are subject to language specific variations.

As a result, the Chain Uniformity approach preserves a strict A/A-bar treatment of Scrambling paradoxes, while allowing the kind of flexibility required to capture the A/A-bar variable status of certain positions.

ENDNOTES

1. Most of this material is excerpted from Canac Marquis (1993). I would like to thank Peggy Speas, Hagit Borer and Tom Roeper for their helpful comments. Also, thanks to M. Kitagawa, Satoshi Tamioka and Bernard Rorbacher for sharing their native speaker intuitions. Usual disclaimings apply.
2. Mahajan (1990) in his study on Hindi, characterizes a split between so-called Short Distance (short-D) scrambling and Long Distance (long-D) scrambling. Roughly, short-D scrambling is clause-bounded and shows both A and A-bar type properties, whereas long-D scrambling is unbounded and only shows A-bar type properties. Mahajan proposes that this split reflects a typical distinction between A-chains and A-bar chains, assuming that Scrambling can either involve an adjunction or substitution operation.
3. For instance in Japanese, the overt Question marker *ka* or *no* must occupy the head of COMP in a Wh-question. Aoun and Li propose that these question markers reflect a spec-head relation, where spec of CP is occupied by a Null Operator, distinct from Wh-elements. The proposal that Wh-elements in these languages are not intrinsically interrogative is found in various sources, e.g. Cheng 1991, Kuroda (1965), Li 1992 and Nishigaushi 1990 among others. These authors claim that Wh-elements are some kind of polarity items linked to their licenser, e.g. a Question Operator, for appropriate interpretation.
4. There is a possible complication to mention here. If Wh-elements truly are polarity items, scrambling a Wh-element outside the scope of the Question operator might be expected to violate a c-command requirement on licensing of these elements. The trace of the Wh-element is crucial here, and one possibility is that a reconstruction effect is at play, allowing the Wh-element to remain in the scope of its antecedent, in a parallel fashion to dependent elements proposed outside the c-command domain of their antecedent, e.g.; 'himself_i, I am sure John_j likes t_i', '[Which pictures of himself]_i, does Mary think John_j likes t_i'.
5. L&St consider *true* Qps as composed of a quantifier Q, a nominal term T and a range R such that R is possibly a non-singleton set. For instance, 'which man' is a *true* QP since it contains a Term 'man', a Quantifier 'which' and a Range defined over the set of man over

which Q quantifies. L&St maintain that Topics are generally referential expressions and Null Operators do not define their own Range, their reference being fixed by their antecedent or co-varying with the latter. But see footnote 6 for a remark on Topics.

6. The generalization based on the notion of *true* QP is not clear cut however. Topics can be quantifying expressions, as discussed in Ward (1986), and more recently in Postal (1993).

For many native speakers, the WCO effect is not always as strong as one would expect, e.g.,

- i. ? Everyone_i of these patients, I am sure his_i doctor would stay with t_i overnight.
- ii. ? Each_i of these articles, I told its_i author to revise t_i once more.

Postal points out that the generalization falls short of explaining the following type of contrast.

- iii. This man_i, I am sure his_i carving annoys t_i

- iv. * This man_i, I am sure this carving of him_i annoys t_i

Also unexpected is the behavior of the NO involved in infinitival relatives, which are restrictive and should involve a *true* QP for L&St. Just as in Tense restrictive relatives, a WCO is expected, but it is very weak in comparison to Tense relatives, e.g.,

- v. ?* Here's a boy whom_i you should tell his_i mother to pick up t_i

- vi. ? Here's a boy [O_i to tell his_i mother to pick up t_i]

Further, the awkwardness that remains in (iv) might be reduced to the independent marginality of pronoun binding in infinitival relatives, in contrast with Tense relatives, e.g.

- vii. Here's a man who_i built his_i house

- viii. ? Here's a man_i to build his_i house

For the purpose of the present paper, I propose an analysis based on Lasnik and Stowell's generalization, but see Canac Marquis (1993) for an account of WCO which covers the cases above and the Japanese ones without relying on the notion of *true* QP.

7. In this paper, Uniformity is only considered from the point of view of the A/A-bar distinction. Uniformity for Head chains is standardly not taken to involve the A/A-bar distinction, though Canac Marquis (1989, 1993) proposes the ban against 'raising to object' extends to Head-chains as well. Uniformity for Head chains holds at the level of X-bar projection, i.e. X⁰ and XP level constituents do not mix in Chains. For instance, Chomsky (1993, classnotes) attempts to derive such result from a theory of X-bar Chain Uniformity. Plausibly, other properties might be subject to Uniformity, e.g. Case. A plausible hypothesis is Chain Uniformity is an absolute condition of Chain wellformedness, governing all syntactic properties of Chains. See Canac Marquis (1993) for more discussion on these issues.

8. Implicit here is the assumption that chain construal need not be an actual 'history' of movement. Rather, the current proposal is consistent with a Representational approach to Generalized Transformations. See Canac-Marquis (1993) for a discussion of the appropriate framework, inspired from work by Lebeaux (1988), and Chomsky (1956, 1992), among others.

9. In Canac Marquis (1993) I argue that the Case property of A-chains is derivable and need not be stipulated in a Chain definition.

10. Following Chomsky (1986b) and Saito (1991), I assume that Binding conditions, in particular condition A and C, must be checked at LF.

11. The analysis relies on the assumption that the verb remains in the VP. Browning and Karimi (1991) do not argue whether the verb raises to INFL in Persian. If that were the case, the analysis in the text is maintained given a natural assumption about vacuous movement. If V raises to INFL, the adjunct containing the F-gap must be prevented from right-adjointing to AgrP, allowing the P-gap to escape binding by the small-*pro*. In fact, this would be a mirror image of the derivation where the adjunct precedes the IO and is left-adjointed to AgroP and escapes A-binding by small-*pro*. The crucial difference between the two derivations is that only right-adjunction is vacuous movement. Interestingly, a parallel case can be construed in English. Chomsky (1986a) notices that a subject Wh-trace can license a P-gap in case the adjunct is preposed outside the c-command domain of the trace, cf.

- i. * these are the articles [O_i that you knew [t_i were written by Bill [even without PRO analyzing e_i]]]

- ii. these are the articles [O_i that you knew, [even without PRO analyzing e_i] [t_i were written by Bill]]

Left-adjointing the adjunct to IP or CP prevents an anti c-command effect in (ii). However, vacuous right-adjunction does not (ii). This suggests that Vacuous movement cannot be used to 'save' an illicit representation, which also explains the case of Persian.

12. The actual term used by Saito and Tada is 'VP-internal' scrambling, which can be confusing. As discussed in the text, VP-internal scrambling does not mean scrambling within the domain of VO, i.e. Tada and Saito suggest it is scrambling to spec of AgrP. Instead of VP-internal, I use the term '*IP-internal*' scrambling and contrast it with IP-scrambling.
13. Canac Marquis (1993) argues that DPF applies equally with IP (subject extractions) and that PPs are headed by their own AgrP, allowing preposition stranding.
14. Canac-Marquis (1993) draws a distinction between 'inherent' A/A-bar positions, i.e. roughly sister to lexical categories and adjuncts respectively, and 'inherently undetermined' positions, such as specifiers of functional categories. Regarding spec of CP, it is argued that its alleged A-bar only status need not be stipulated and follows from a structural conspiracy.

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